

OTTAWA HOME COMPUTING

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OTTAWA HOME COMPUTING CLUB

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BRAND NEW FORMAT

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OTTAWA HOME COMPUTING

OTTAWA HOME COMPUTING is the newsletter of the Ottawa Home Computing Club. Membership is open to all with a genuine interest in personal computing for \$15/year in Canada. Membership includes OTTAWA HOME COMPUTING, which is published 10 times a year. Meetings are usually held on the third Monday of each month, 7:30 p.m. at Charlebois High School, corner of Heron Road and Alta Vista Drive in Ottawa.

When submitting articles, please type or write legibly on 8 1/2 by 11 inch paper, double spaced. Articles may also be submitted on disk, or in a "print-ready" format. Contact the editor for more information.

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Address correspondence to:

Ottawa Home Computing Club,
P.O. Box 4164, Station "C",
Ottawa, Ontario K1V 4P3

CLUB EXECUTIVE

President	Pierre Castricum	521-6840
Vice President	Scotty Adams	592-5492
Secretary	Vacant	
Treasurer	Mike Bryan	723-0404
Education Director	Wayne Schaler	726-7811
Membership	Mike Coitas	
Bulletin Board Editor		
& Amiga Librarian	Don White	829-2082
Newsletter Editor	Bob Mason	837-3197
Apple Librarian	Vojta Fryzek	722-9778
Commodore 64 Librarian		
	Carl Bignas	776-1402
Commodore 128 Librarian		
	Peter Nickless	837-1402
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TPUG Librarian	Marv Bero	225-8551
Retail Disk Distribution		
	Peter Martin	731-7700
COMAL Librarian	Ed Steenhorst	820-5339
OHCC Bulletin Board		828-8440

Ottawa Home Computing Editor:

Bob Mason
Box 182, R.R. 2,
Orleans, Ontario K1C 1T1

EDITORIAL

by Bob Mason

Well, here it is, the new format. Hope it's easier on the eyes. Still need more graphics though. Thanks to Vojta for the ones in this issue. And thanks to Scotty for the Cover logo.

One good thing about this size of publication is that the author can more easily prepare an article to go straight in, as Peter Nickless did with his first column, which will be a regular feature in the Newsletter. This gives the author a bit more control over the final printout. (an 8 1/2" x 11" page with 1/2" margin top and sides, 3/4" margin on the bottom).

Peter's article is a good example of what a person can put together, even if not an expert in computing. Peter just gathered useful tips from various magazines, and his own experience, and put them on paper.

Thanks also to John Batchelor who, despite a lot of distractions at home, kept his consecutive string going. Jan has written a very good review of GEOS, covering

some points all the other reviewers missed. And Bob Handforth has started a series on Music Programs.

SAMMY SYNTAX

BY VOJTA FRYZEK



PRESIDENT'S CORNER

Commencing with this issue of the newsletter, the President's Corner will become a regular feature of all future issues. It is my intention to use this column as a means whereby you, the member, will be kept abreast of the many happenings within and around the club.

As you can see with the introduction of a new format for the newsletter, the OHCC has gone through a few changes in the past several months. These changes were brought about to help broaden the club's base of operation and also to help bring some structure to its running.

The club participated in the MAPLECON convention earlier this year (July); a great number of persons visited our booth and in

some cases, became OHCC members. In an effort to duplicate this, the executive committee resolved that we should participate in the upcoming IEEE conference which will be held on October 18th and 19th at the University of Ottawa. Admission & parking will be free of charge. Hope we'll see you there.

In conclusion, the successful operation of any organization or club is largely dependent upon the participation of its membership. Your input, be it in the form of suggestions, articles for the newsletter, or committee volunteer, is and will continue to be very much appreciated. For your convenience, communications with certain members of the executive can be made in either official language.

MEETING SCHEDULE

The following is the list of meeting dates for the next year. Dates marked with an asterisk do not fall on the third Monday of the month.

1986	1987 (cont'd)
October 27*	March 23*
November 24*	April 27*
December 15	May 18
1987	June 15
January 19	July 20
February 16	August 17

AGENDA

October 27 Meeting

7:30 Disk of the Month
Membership Sales
Socialization

8:00 Business Meeting

8:30 Computers in the High Schools
(see note in "Upcoming Meetings")

9:00 Special Interest Groups

Group	Room
Apple & Mac	Room 227

Browse through the library, order disks, discuss applications, problems, etc.

Commodore and Disk of the Month Room 219

Same as above, but for Commodore. Carl Bigras is our new librarian and will gladly help you out with any problems you might have.

Amiga Room 208

Don White has put together a number of disks of public domain software for the Amiga. You can buy the disks, watch his demos, and ask questions.

C128, CP/M Room 210

Peter Nickless has a rapidly increasing library of C128 and CP/M software. If you've got a C128, drop in and say Hi.

COMAL Room 221

Comal is a programming language similar to BASIC, but much faster, more powerful, and easier to use. Find out about it from Ed Steenhorst, our COMAL librarian.

Forth Room 230

Forth language is shorter and faster than BASIC. (20 to 600 times faster). Used with robots, sensors, and many appliances. Much more.

SPECIAL INTEREST GROUPS

The following are Special Interest Groups (SIGs) which meet monthly and determine their own format. If you're interested in

developing further in one of these fields, drop in. You're sure to find someone who shares your interest.

Computer Graphics	Room 223
Beginning Computerists	Room 224
Telecommunications	Room 212
Data Base Users	Room 213
Machine Language	Room 215
Music	Room 225

More details and possible room changes will be indicated at the meeting. Some groups are now meeting on other evenings during the month, to give themselves additional time together. Please note that No Smoking is allowed on the school premises.

UPCOMING MEETINGS

October 27

The speaker is Mr. Katic, a Computer Science teacher at Woodroffe High School. Woodroffe has been in the forefront in Computer Science among high schools in the Ottawa Board of Education, and selected as a test sight for the Icon computers. As well as Icons, Woodroffe has Apple and SuperPet computers. Mr. Katic will be talking about Computer Usage in High Schools, not only by students but also by the teachers for word processing, record keeping and many other functions. A question period will follow.

November 24

Rummage/Swap Night is a repeat (by request) of last year's successful evening. It's a chance to clean out your closets and back storerooms of old computer equipment you no longer need -- someone else may have a use for it. Perhaps you have software you've grown tired of, or hardware you've grown out of. Magazines were a popular item last year.

One note: please do not bring copied software -- you will not be allowed to sell it. All items for sale will be inspected and approved at the door, and software must be in the original package.

December 15

Round Table Discussion This evening is intended to be one of socializing. A panel will be available to answer questions from the floor, and generate discussion on various topics. In keeping with the season, rumour has it that refreshments will be served.

January 19, 1987

The topic is Women and Computers and all that that implies. It's perhaps our most ambitious evening so far, attempting to understand why, for example, there are so few women at our meetings. Among the topics possible for examination are: 'Home Programs' (Fitness, nutrition, genealogy, word processing); programs that are not of the male-oriented shot-em-up variety (i.e., cooperative rather than combative -- educational programs, Little Computer People, etc.) as well as computers in the workplace (it's probably true that as many women as men use computers for gainful employment. It'd be nice to get as many women out for this meeting as possible, in order to have a more meaningful dialogue. I mean, a bunch of men discussing Women and Computers is not going to get very far.

February 16, 1987

Computer Games. We had a games demonstration night two years ago and people are still talking about it. We're bringing it back by popular request, after Christmas so you can show off all your Yuletide acquisitions.

The reason it was delayed so long is that it is very difficult to set up. It's very difficult to get volunteers to demonstrate the games. It's even more difficult to get members to bring out their equipment to use in the demonstrations. Prove us wrong and we'll have this, and other demonstrations, more often. Phone Wayne Schaler (or grab him or any other executive member at the meeting) at tell him you'll bring your equipment, or bring and demonstrate a game.

March, April, May, . . .

We're open for ideas. Got one -- contact Wayne Schaler. I have one: Desktop Publishing. There's an article in this issue on it, and I just watched as Scotty Adams did the front cover for this issue with FULL PAINT, a program that can alter each dot that a printer prints. Now if only I could find some other people that are doing it...

COMMODORE 128

HINTS, TIPS AND TRICKS
COMPILED BY P. NICKLESS

C128 Slow Listing- To slow down a C128 listing or other printout, just press the Commodore Logo key. This performs the same function as pressing the CTRL key on the C64.

C128 Bytes Free- At power-up, the F8 function key activates the machine language monitor, which many of us seldom use. You may want to redefine this key to give you something more useful - such as the amount of remaining memory. Do this:

```
KEY 8, "?FRE(0)"+CHR$(13)
```

C128 Tab Stops- You can clear all tab stops by pressing and releasing the ESC key, then pressing and releasing the Z key. You can restore the default tabs stops by using ESC then Y in the same manner. You can set or clear a tab stop by moving the cursor to the desired position and pressing [SHIFT TAB] or [CTRL X].

C128 Load & Run- There is one simple command used to load and run a C128 program from disk. Try it:

```
RUN "programname"
```

C128 Bell- You can ring the bell on the C128 by executing:

```
PRINT CHR$(7)
```

Shifted RUN/STOP- On the C64, when you press SHIFTED RUN/STOP you will be prompted with "press play on tape". (The computer is trying to load and run the next program on the cassette). If you hit those keys by mistake you can correct the error by pressing the STOP key. On the C128, however, pressing SHIFTED RUN/STOP loads and runs the first program on your disk without pausing for input. If you accidentally hit those keys whatever is in memory will be overwritten by the new program coming in from the disk. If the overwritten program was a valuable one you had not yet saved, it would be annoying at the least. This can be guarded against by placing a sequential file first on your disk. Since the computer cannot load it, it can't overwrite any programs. You can put such a file on a newly formatted disk by executing this line:

```
OPEN 2,8,2,"INSURANCE,S,W":CLOSE 2
```

Of course you can always leave the disk drive door open to serve the same purpose.

C128 Disk Operations- Some of Basic 7.0's disk commands give trouble when you try to use them with string variables in their arguments. If you put your string variables inside parentheses, the problem should vanish. Another solution is to operate on the variables before using them. Any of these should work:

```
DOPEN#1,"FILENAME" * DOPEN#1,(F$) * DOPEN#1,""+F$
```

GEOS: A DELIGHT

by Jan Frajkor

GEOS for the Commodore 64 is great fun. It is not only a delightful program to use, but it is a terrific bargain, intelligently thought out and certainly the most powerful enhancement to the C-64 system anyone has thought up yet.

What's GEOS? Briefly, it turns the 64 into a minor-league Macintosh. No, you can't expect the 64, with its limited memory, to do all the fancy things that an Atari 1040 or a Mac can do -- but from my experience so far, I'd guess that it can do a good 80 per cent.

GEOS, v.1.2, comes with two programs -- GeoWRITE, a word processor, and GeoPAINT, a painting/drawing program. Since Commodore has adopted the system as a future official operating system, new programs making use of the icon-mouse system are to be expected.

Berkeley Softworks tosses in five different type fonts on the same disk and gives you a bonus disk with more fonts. On the back of the GEOS disk, there's the Quantum Link telecommunications program. Where else can you get so much for so little?

I did a direct comparison between NEOCHROME on the Atari 1040ST and GeoPAINT on my old 64. Both are excellent drawing/painting programs, both have very similar control and command structures, and, as far as I am concerned, there's nothing NEOCHROME does that GeoPAINT doesn't do as well.

As in all these Mac/Jack programs, you select paint, draw, line, circle, box, pattern and all those other things just by moving a pointer to a self-explanatory icon and clicking a mouse or joystick button. The screen on the 1040 indeed looks much finer, and its selection of colours much greater -- but then, at three times the price, you should get something.

Printing either text or graphics from GEOS is much simpler than from NEOCHROME. You just point to the icon of the file you

want to print, holding down the joystick button and dragging your file icon over to the icon of a printer. GEOS supports just about any printer you would usually come across, and is developing printer drivers for others.

What about text?

I found 1st WORD on the Atari a kind of WORDSTAR with icons -- in short, clumsy. You go through four or five steps of opening files, saving them, selecting print, setting print parameters, and then going through it all again if you want to make one more copy. A real drag if all you print is a two-paragraph memo.

GeoWRITE does it quickly and efficiently, and to boot you can use some of the weirdest designs of type fonts you have ever seen -- from hollow-outline pseudo-Gide English to ultra-modern linked-letters that look so fancy they're impossible to read. The days of illuminated manuscripts are back! It's the font program that makes GEOS different, and fun. The fonts show on screen as they will in print, which is nice, but it is terribly slow writing that way. It's best to write everything in 40 columns, small type, and then go back and re-format in fancy script fonts. That's easy to do.

You can incorporate graphics you've made with GeoPAINT into articles you're writing with GeoWRITE. Again, it's just a matter of opening the disk file that contains your graphic, cutting the graphic into a buffer, opening your write file into the window, and pasting the picture in at the cursor position.

You can run ordinary programs through GEOS -- and it will even convert the directories for you so that the programs will show as icons on the screen. This makes deleting and copying files exceptionally easy. It's just a matter of dragging around pictures of your files and pushing the mouse button.

But remember that programs not created

under GEOS will not be able to use the drop-down menus and other easy features.

Some programs that use the memory locations at \$C000 will wipe out GEOS -- which just means you'll have to re-boot it instead of going back to it automatically. No big problem.

The Down Side

You knew there had to be one, right?

If you are a serious writer, don't throw away PAPERCLIP or SPEEDSCRIPT yet. GeoWRITE has to give up something, and what it gives up is control over spacing, justification, margins wider than 80 columns, column printing, and other refinements.

Most major word-processing features are available, like cut and paste, block delete and move, and copy commands.

Another drawback is clumsy movement. A joystick is not a mouse. Moving a mouse a certain distance moves the pointer an analogous amount. A joystick just gets the pointer moving in a certain direction and it over- or under-shoots a great deal of the time. Commodore plays to bring out a true mouse. It will be worth getting.

You can't change the size and shape of the windows in GEOS the way you can with Atari or Macintosh. You can't have more than one window on screen. You can't stick many files into a master file or folder or subdirectory to link them under one icon to avoid screen clutter. Only eight icons can appear in the GEOS window at a time, so if you have 144 files on your disk, you will have to page through them eight at a time. That's simply because, let's face it, 64K is not a lot of memory.

Similarly, you may have 20 or 25 font styles on your disk, but only the first 16 will be shown. If you want to show the ones lower down, you re-arrange your disk to bring up the later ones to the top. That's not hard, but it's just one more step.

GEOS is a huge program, which means that you have to break up GEOS into its component programs and delete a lot of files to make

separate working disks. For example, you may have GeoWRITE, a printer driver file, and a few font files on one disk and that's all. The program is constantly swapping memory into and out of the disk and the computer. It will not work if there is little space on the work disk.

If GEOS could handle the SFD or the 8250 drives with their massive storage, that would be nice -- but it can't. It can't handle dual drives like the 4040 or MSD either, just your plain old 1541 or the 1571 in its 1541 mode. Let's hope these are weaknesses to be cured later.

GEOS supposedly speeds up loading and saving from the 1541 to three to five times its normal speed -- a permanent fast-load cartridge, so to speak. It does.

But larger capacity drives are what this program really needs. Once you get the 1700 or 1750 RAMdisk expansions, most of your problems would disappear.

Two drives are highly recommended. It will handle those fine, and I adapted quickly to the names 'Drive A' and 'Drive B' instead of device 8 and 9.

This is a program one cannot recommend highly enough. Now that Commodore has officially adopted it as the standard operating system of the new 64C, all of us are going to have an easier time and a lot more fun running our old programs as well as the future programs that will undoubtedly be written mainly for mousing.

Berkeley Softworks,
2150 Shattuck Ave.
Berkeley, CA
USA 94704
\$59.95 US

Editors note: This program is available from Maccorn (\$79.95 less 10% for club members) and several other retailers in Ottawa. This program (along with Quantum Link) is included with the new 64C. ■

MACPUBLISHING

by Richard McGuire

This newsletter has run articles on some of the free computer publications available in the Ottawa area. Probably the most significant of the free publications is Input.

Though originally aimed at Commodore users, this Alberta publication has expanded its coverage to include MS-DOS, Apple and Atari computers. The format is tabloid newspaper; the last issue was 36 pages. Advertising is usually from the west, though many national advertisers, and some eastern retailers have recognized the increasingly important role Input is playing in Canadian computing.

Articles are interesting and written on a level anyone can understand. A listing of BBC's across Canada is printed, though in need of updating. Input is available at most retailers in the Ottawa area -- I got this one from Iap & Ioom. The following article was the feature in the September publication.

Traditionally community newspapers have been a labour intensive operation. A little tabloid in the Edmonton neighbourhood of Strathcona is using several Apple Macintosh computers and a LaserWriter in place of the staff who would normally be needed to get such a paper off the ground.

The Strathconian, the brainchild of Cameron Smith and his wife Pamela Lang, is just one of many publications taking advantage of a computer technology that has become the buzz word of 1986 -- desktop publishing.

"I figured we're a brand new company and we can't afford the labour," explains Smith, 29, who began the paper in the spring. "The only way we could do it was to start up and get the computer equipment. People are more expensive than computers."

The Strathconian is a 16,000 circulation free-distribution paper which takes a folksy small-town approach to its urban Edmonton neighbourhood -- even suggesting, with tongue in cheek, separation from Edmonton.

The Strathconian has three 512K Macintoshes, one with an external floppy drive and one with a 20 megabyte hard disk. Instead of expensive traditional phototypesetting, the paper uses an Apple LaserWriter Plus. At 300 dots per inch, the Laserwriter isn't as sharp as phototypesetting, but on rough newsprint, it's hard to detect the difference. The hardware is linked by an AppleTalk network, and a Hayes 1200 bps modem connects it with the outside world. An ImageWriter II dot matrix printer is equipped with ThunderScan, a device for digitizing graphic artwork. All this equipment sells for about \$20,000.

"This total system cost less than one typesetter," says Smith referring to the bulky, inflexible equipment used by most community newspapers.

After six years working in community newspapers, Smith knows what the old way is like. Long strips of copy on photographic paper are run through oily chemicals, then cut by hand and carefully measured to fit available space in the paper. Copy is waxed to give it a stiff backing, cut with sharp knives, and fitted manually into place.

Using PageMaker software from Aldus, this messy process all takes place on a computer screen. Ads and editorial copy can be fitted easily, moved as desired and printed out on the LaserWriter in a form that's ready to take to the printing press.

Articles written with Microsoft Word flow into neat columns on PageMaker. Graphics, such as advertising logos, can be scanned with ThunderScan, touched up using MacPaint, and slid into place with PageMaker.

With the drop in price of laser printers, other companies are getting into the desktop publishing field pioneered by Apple. Aldus is releasing an IBM version of PageMaker this fall which will run under the Mac-like Microsoft Windows on the IBM. A number of software companies are writing desktop publishing packages for IBM with a Hewlett Packard LaserJet Plus, although promotion

C-64 GAME DESIGN

Twenty-second of a series

by John Batchelor

Even with a month lay-off in the newsletter and a two-week delay in the meeting schedule, I haven't had much chance to think out or research an article. The most important reason is a new daughter at our household. The happy event has underlined for me the major prerequisite for interesting game creation -- spare time in long, uninterrupted stretches. Don't hold your breath for anything ambitious from me.

I've had opportunities to play some of the latest commercial game releases and I occasionally look in at the arcades to see the newest stand-alone game creations. It is a bit disheartening to see what the professional teams can do now. Weeks of work must have gone into the music alone. The sports simulations use sprites which apparently are traced laboriously off slow motion films of real athletes. Screen after screen of background scenery has been designed, pixel by pixel. Prices are starting to crack a bit -- it's sometimes worth forking out the retail price for a full-featured edition with manuals, etc.

The only real disappointments are those games translated from other machines which lack the C-64's sound and colour capabilities -- much the way the Amiga owners must feel about some of the early software for their machines. You should stretch the capacity of the machine instead of writing for some lowest common denominator.

For example, ZORRO and THE GOONIES seem to be well done Apple II games. What spoils them for me on the C-64 (besides being unable to get off the first screen) is the use of sprites in the same colours as the background. THE GOONIES is (are?) red, white and blue on black -- players, money, walls and so on. ZORRO is generally black, yellow and brown. This is probably a technical limitation on the Apple. Why preserve it on the C-64?

Nevertheless, the amateur game designer can't realistically hope to match the com-

mmercial creations. There are so many games out there already that there is little point spending your next two years of spare time to develop another BEACH-HEAD or SUMMER GAMES. See my earlier articles for why you won't get rich. What kind of programs should you write, then?

As I look back on the games I have written, the ones which hold up best for me are those which do not attempt to compete with the mainline commercial programs. That is, they do not depend on how fast you can twitch the joystick. For example, LETTER-HUNT requires some dexterity but it rewards a good memory and a knowledge of the upper- and lower-case alphabets. MAP-RACE is a race but you have to know Canadian geography and be able to recognize portions of maps. Both games have good randomization so that they are different every time.

My recommendation then is to go for an entertaining presentation of an educational theme. The game treatment should be something that a computer does better than other media such as books or films. It should not be cut-throat and allow both competitive and cooperative elements.

For example, MAP-RACE lets the non-expert player watch the expert and follow him or her around the country, sneaking in ahead at the last minute. Even if you've gone to the wrong end of the country, you may be in a better position for the next town.

In LETTER-HUNT, the advice of kibbitzers on the location of letters is most welcome. The pace is slow enough that everyone can suggest routes and strategies.

My current, but much delayed, project is based on putting two players into choices about cooperation and greed. Suppose that some of the stones in a dike are jewels. You can collect them yourself, leaving leaks, or you can work with another player to patch the holes, but share the loot. Within a time limit, how often will you cooperate or be selfish to maximize your score? Go ahead and steal this idea if you can implement it before me! ■

BUTTERFIELD'S MUSIC DRIVER

by Bob Handforth

I hope that this will be the first in a series of four reviews, each dealing with a different method for programming music in three voices on the C-64. There probably are a number of different basic programming approaches to this task. I have encountered four of them so far, and each one has its own peculiar advantages and disadvantages.

The end purpose of each method is to make available to the computer a sequence of high- and low-frequency numbers. These, of course, are essential to the program if any music is to be heard at all. The way in which these numbers are determined and presented is what makes each of the four methods distinct and unique.

The ADSR envelope, the tempo, duration, waveform, and filtering processes present few problems since they really only define the different qualities which the music is to have, and consequently are more a matter of choice or selection. The high- and low-frequency numbers, however, are in effect the notes themselves and make up most of the data to be read in the program.

In considering the four methods, the basic underlying programs themselves are distinct from each other, but each one can be re-used with different sets of data to play different tunes. The features which make each method unique can be roughly divided into two groups: first, the preparatory work (including the typing of the data) which must be done by the programmer; secondly, the calculations and processes which the computer must perform before the data can be properly assimilated and put to use. Each of the four program types will be examined mainly with respect to these two sets of requirements.

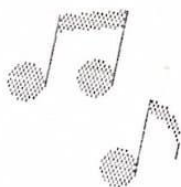
Probably the most familiar method for programming three-voice music is the one referred to frequently as "Jim Butterfield's Driver Program." This is the simplest of the four and the easiest to use.

Its one, big, beautiful advantage is that you obtain instant music the moment you type RUN-RETURN. (This welcome feature is not

achieved in any of the other three which I have tried). In the Butterfield program there is no waiting period while the computer wrestles with a series of formulas or complex equations. This is because the high- and low-frequency numbers are entered directly as data by the programmer and are therefore available for immediate use by the computer.

A number of programmers have used Jim Butterfield's method to play music, and several examples have been included in the OHOO and TPUG disks-of-the-month. In the ones that I have seen, each separate data line contains three pairs of high- and low-frequency numbers plus a duration value which applies to all of them. In effect, therefore, each note of music requires seven data items.

This serves to point out the chief drawback in Butterfield's program -- the lack of complete flexibility and independence for each voice. You cannot have one voice playing a half-note while the others are sounding quarter- or eighth-notes. This is a severe restriction to have to cope with, but there are one or two little tricks which can help in simulating some measure of voice independence.



When a note's duration has to be extended, a sound can sometimes be prolonged from one duration value to the next if the sustain and release numbers are high enough to avoid an intervening "gap." Also, the careful and judicious use of rests (indicated by a pair of zeros in the data) can sometimes create the impression of one or two voices being used independently.

In this connection, Jim Butterfield's program is ideally suited for playing much of Bach's music which often is characterized

by a kind of mathematical precision. Bach also tended to use a series of single notes much more frequently than prolonged or suspended chords.

The preparation of data by the programmer poses no particular problem, since almost any manual dealing with sound contains a list of musical notes with their high- and low-frequency number equivalents. Still, having to enter seven numerical values for each separate note can be a somewhat arduous task. Having each data line hold only seven entries, however, is not really necessary. This pattern certainly aids in the typing and facilitates debugging, but if it was necessary, some RAM could be conserved with each data line was filled to its maximum capacity.

In order to have some means of comparing the merits of the four program types, I used a short test which is probably not completely accurate. I prepared a brief musical sequence (32 bars from the Dr. Zhivago theme) and programmed exactly the same version as data for use in each method. As one would expect, the Butterfield program was an easy winner insofar as set-up time was concerned, since it had a 'zero delay' factor. It was also surprisingly easy on the use of RAM, possibly because the program required almost no calculating procedures.

In the next review, I propose to examine the three-voice program method described on pages 187-191 of *C-64 Programmer's Reference Guide*.

MacPUBLISHING from page 8

for these packages emphasizes business forms and Lotus 1-2-3 pie charts. Unlike the Apple LaserWriter, the HP LaserJet Plus can't support full-page graphics at 300 dots per inch.

Smith says he chose the Mac system because "it was a complete system." There was no need to modify software or worry about how to interface the various hardware elements. "It was so easy," he says.

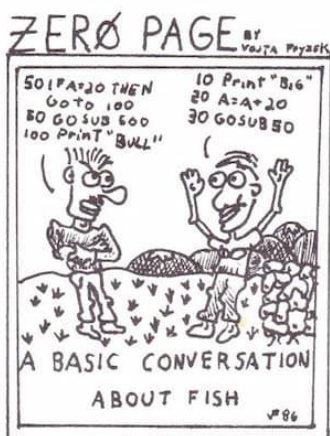
The *Strathconian* uses its Macs for other applications. Accounting is done on Multiplan spreadsheets. Various office correspondence is done with Microsoft Word. Business

forms, such as statements, are produced with PageMaker.

And although revenue from advertising has been slow in its initial months, *The Strathconian* has been able to bring in extra dollars doing typesetting and layout for other community-based publications.

Smith dreams of using the modem not only to take stories from phone lines, but as a research tool. One of *Strathconia's* landmark is the Princess Theatre which plays classic movies. Smith imagines the possibility of searching through New York Times files for original reviews of some of the films shown.

Community papers could share stories over data networks, he suggests, recalling how at one paper reporters at a sister paper would read stories verbally over telephone lines long distance.



CLASSIFIED

FOR SALE: 1525E printer in original box. \$100. Carl Eigras, 776-1402 after 4 pm.

FOR SALE: Mannesman Tally Spirit 80 with Cardco +6 interface, asking \$250. Jean-Guy Marinter, 741-7030.

FOR SALE: P.I. Printer Interface, \$50. Ron King, 744-4281.

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Languages
Utilities
Communications
Entertainment
MIDI Music
Educational
Logiciel
français



SYSTEMS

64
128
Amiga
IBM-PC
Apple
Mac

PRINTERS

Epson
Star
Panasonic
Rolland
Brother
Commodore

MODEMS

64/128 300bps Modem \$95
Hayes SmartModem
RS232 Adapters \$75

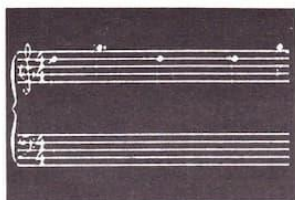
BACK-UP

Isepic \$96
Snapshot \$75
Copy II

ACCESSORIES

Diskettes
Paper
Ribbons
Cables
Expansion Options

NEW



MIDI MUSIC

Software & Hardware

ROLLAND
YAMAHA
CASIO
KORG
MIDI Interfaces
Sequencer Software

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choice is not listed,
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MACCOM's mailing address is:
838 Eastvale Dr.
Ottawa, Ont. K1J 7A4

OTTAWA HOME-COMPUTER USER
GROUP

Location: Charlebois High School
Alta Vista & Heron Rd.

Dates: Third Mon. of each month 7:30pm
Information: 749-1232

in Ottawa
MACCOM Systems Ltd.
749-1232